

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1 - 16 (Canceled)

17. (Previously Presented) A method for designing a bi-connected ring-based network comprising:
- receiving a list of locations where network traffic is at least one of originated and delivered;
  - receiving a list of pairs of directly connected locations, each defining a corresponding network traffic carrying connection including one or more signal carrying connections between each of the directly connected locations, and a capacity for each of the network traffic carrying connections;
  - receiving a list of traffic demand between each of the listed pairs of locations;
  - determining a dual homed cover including one or more dual homed cycles, each cycle comprising a closed loop sequence of directly connected locations and corresponding network traffic carrying connections, wherein each location, which is capable of being bi-connected, is included in at least one of the one or more dual homed cycles;
  - routing the traffic demand over the one or more cycles via the one or more of the network traffic carrying connections;
  - at least one of outputting a report and storing a representation containing the designed bi-connected ring-based network;
  - finding a list of candidate cycles;
  - selecting one or more of the candidate cycles from the list wherein selecting one or more cycles comprises:
  - rating each cycle;

selecting the best rated cycle;  
determining if the selected cycles cover all the locations capable of being bi-connected;

if the selected cycles do not cover all of the locations capable of being bi-connected, selecting an additional cycle, which is bi-connected with at least one of the previously selected cycles, and which in combination with the previously selected cycles has the best rating, and

repeating the selection process for additional cycles until all locations capable of being bi-connected are covered.

18. (Previously Presented) A method in accordance with claim 17 wherein rating each cycle includes determining an exhaust coefficient for each cycle in combination with any previously selected cycles.

19. (Original) A method in accordance with claim 18 wherein the exhaust coefficient for each cycle is equivalent to the sum of all thicknesses for the cycle being rated and the any previously selected cycles divided by the capacity of the cycle being rated and the any previously selected cycles.

20. (Original) A method in accordance with claim 19 wherein the thickness of each cycle is equivalent to the maximum one of an estimated network traffic traveling through each of the network traffic carrying connections between the corresponding directly connected locations of the corresponding cycle.

21. (Original) A method in accordance with claim 20 wherein the estimated network traffic traveling through each of the network traffic carrying connections is estimated by adding a proportionate amount of intra-ring traffic and inter-ring traffic dependent on the number of cycles including any previously selected cycles and the cycle to be rated, which contain one or more of

the locations corresponding to the traffic demand between each of the listed pairs of locations.

22. (Canceled)

23. (Previously Presented) A method for designing a bi-connected ring-based network comprising:

- receiving a list of locations where network traffic is at least one of originated and delivered;

- receiving a list of pairs of directly connected locations, each defining a corresponding network traffic carrying connection including one or more signal carrying connections between each of the directly connected locations, and a capacity for each of the network traffic carrying connections;

- receiving a list of traffic demand between each of the listed pairs of locations;

- determining a dual homed cover including one or more dual homed cycles, each cycle comprising a closed loop sequence of directly connected locations and corresponding network traffic carrying connections, wherein each location, which is capable of being bi-connected, is included in at least one of the one or more dual homed cycles;

- routing the traffic demand over the one or more cycles via the one or more of the network traffic carrying connections;

- at least one of outputting a report and storing a representation containing the designed bi-connected ring-based network wherein routing the traffic demand includes grooming the traffic demand assigned to the available signal carrying connections of the one or more cycles so as to minimize the amount of network traffic management equipment required for routing the traffic demand wherein grooming the traffic demand includes:

- creating a list of traffic demand entries, where each traffic demand entry comprises a value of the volume of traffic and a sequence of network traffic carrying connections that the traffic traverses;

- creating a list of signal carrying connections where each signal carrying

connection comprises a traffic carrying capacity, a value corresponding to the amount of traffic already assigned, and a list of traffic management equipment supporting the already assigned traffic;

rating the traffic demand entries with respect to the signal carrying connections having unassigned capacity;

assigning the value of the volume of traffic associated with the traffic demand entry having the highest rating to the corresponding signal carrying connection having unassigned capacity; and

recalculating the ratings of any traffic demand entries, where the value of the volume of traffic has not yet been assigned, and assigning the value of the volume of traffic associated with the traffic demand entry having the highest rating to the corresponding signal carrying connection having available unassigned capacity until all the traffic demand entries have been assigned.

24. (Original) A method in accordance with claim 23 wherein creating a list of traffic demand entries includes dividing into multiple traffic demand entries, individual traffic demand entries which traverse network traffic carrying connections of multiple cycles by separating into corresponding entries the portion of the sequence of network traffic carrying connections traversing an individual cycle.

25. (Original) A method in accordance with claim 23 wherein rating traffic demand includes determining whether the signal carrying connection has an amount of available capacity sufficient to accommodate the volume of traffic of the traffic demand entry.

26. (Original) A method in accordance with claim 23 wherein rating traffic demand includes assigning a routing preference to traffic demand entries corresponding to inter-ring traffic, as opposed to intra-ring traffic.

27. (Original) A method in accordance with claim 23 wherein rating traffic demand includes assigning a routing preference to traffic demand entries which require less additional traffic management equipment, than the traffic management equipment supporting the already assigned traffic, for routing the traffic of the traffic demand entry.

28. (Original) A method in accordance with claim 23 wherein rating traffic demand includes assigning a routing preference to traffic demand entries which minimizes the amount of traffic management equipment traversed, which is not required for routing the traffic of the traffic demand entry.

29 - 67 (Canceled)